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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/775,653	02/05/2001	Yuuichi Tachino	1076.1063 (JDH)	9294

21171 7590 04/04/2003

STAAS & HALSEY LLP  
700 11TH STREET, NW  
SUITE 500  
WASHINGTON, DC 20001

EXAMINER
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CROWELL, ANNA M

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 04/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/775,653	TACHINO ET AL.	
	<b>Examiner</b> Michelle Crowell	<b>Art Unit</b> 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 24 January 2003.
- 2a) This action is **FINAL**.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 2,3,7,10,11,13,14,17,18 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 2,3,7,10,11,13,14,17,18 and 21- 23 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 2, 3, 7, 11, 13, 14, 18, and 23 rejected under 35 U.S.C. 102(b) as being anticipated by Tepman et al.

Referring to Figures 5 and 6, column 6, lines 15-24, and column 7, lines 35-65, Tepman discloses a plasma reactor 30 which performs etching. The reactor 30 includes a dielectric reactor ceiling 100 (reaction tube), an RF coil 150 (high frequency coil antenna) with multiple windings 152, 154, and 156 (winding portions), and a connecting rod 310 (drive mechanism). The reactor ceiling 100 may be cylindrically shaped or other geometries suitable for plasma processing (col. 5, lines 65-67). The RF coil 150 is mounted on a coil support 270 (intermediate segment which is sloped or inclined), and the coil support 270 connects the various windings in series. In addition, the coil support 270 is located closer to an outer peripheral surface of the reactor 240 (reaction tube) than the RF coil 150. The RF coil 150 is connected to ground at winding 152 and connected to a power supply source at 170. Both the RF coil 150 and the coil support 270 rotate around the reactor ceiling 100 by means of a connecting rod 310 (drive mechanism). When the RF coil is rotated around the reactor ceiling, the majority of the inner surface of the reactor vessel is cleaned (etched).

Regarding Claims 2 and 13

Claims 2 and 13 recite the limitation “when performing plasma etching”. This limitation refers to the intended use (etching) of the plasma apparatus which has no significance in the patentability of apparatus claims. A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Thiabault, 164 USPQ 666, 667 (Bd. App. 1969).

3. Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tepman et al. (U.S. 5,879,575) in view of Okumura et al. (U.S. 5,888,413).

Tepman in view of Forster fails to teach a controller.

Referring to Figures 1 and 17, column 4, line 65-column 5, line5, and column 10, lines 5-10, Okumura teaches that it is known to use a controller 100 to control the rotational speed of a coil 1 by controlling the stepping motor 3 (rotary actuator-drive mechanism). The coil 1 is connected to a stepping motor 3 via rotary shaft 4. By controlling the rotational speed of the coil, better control of the plasma density is achieved. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the rotational drive mechanism of Tepman with the controller as taught by Okumura. This would provide better control of the plasma density inside the chamber.

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4. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tepman et al. (U.S. 5,879,575) in view of Takada et al. (U.S. 5,525,379).

Tepman in view of Forster fails to teach the sloped segment wound around approximately one fourth the reaction tube and the winding wound around three fourths the reaction tube.

Referring to Figure 5a and column 5, lines 28-49, Takada shows a antenna 22 which has a coil antenna configuration including a sloped segment and two windings. The sloped segment is wound around approximately one fourth of a circumference of a peripheral surface of the reaction tube 21. Each winding is wound around approximately three-fourths of the circumference of the peripheral surface of the reaction tube. The advantage of this coil antenna configuration is that prevention of stress when forming a film is enhanced, and therefore it is possible to form films at a high speed. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the coil antenna of Tepman with the coil antenna as shown by Takada. This coil antenna configuration lowers the stress of the film formed.

***Response to Arguments***

5. Applicant's arguments with respect to claims 2, 3, 7, 10, 11, 13, 14, 17, 18, and 21-23 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

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AMC *amc*  
April 2, 2003

Luz Alejandro  
Luz Alejandro  
Primary Examiner  
Art Unit 1763